Sept. 9, 1930. A. D. RUSSELL 1,775,357

PINNING MACHINE

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Fig. 1.

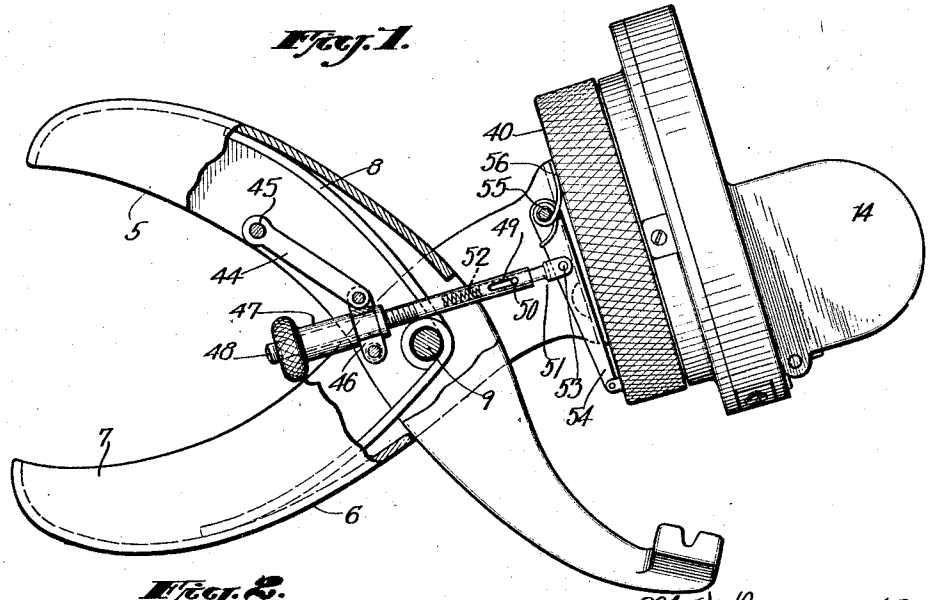


Fig. 2.

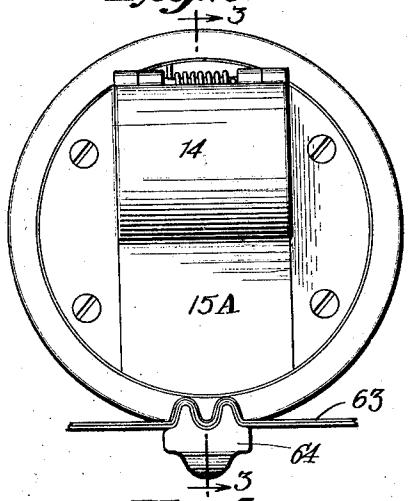


Fig. 3.

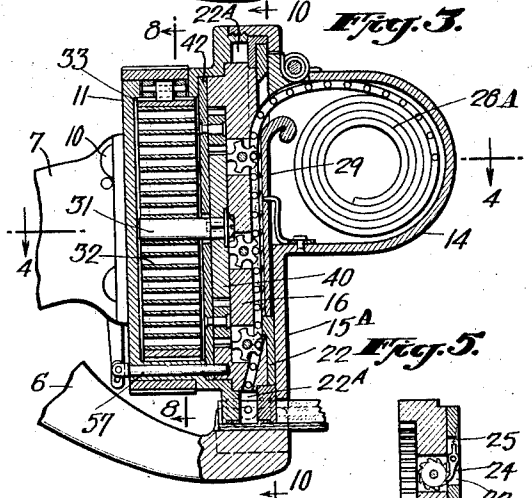


Fig. 5.

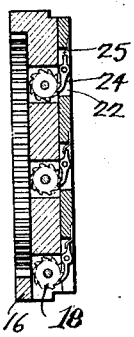


Fig. 4.

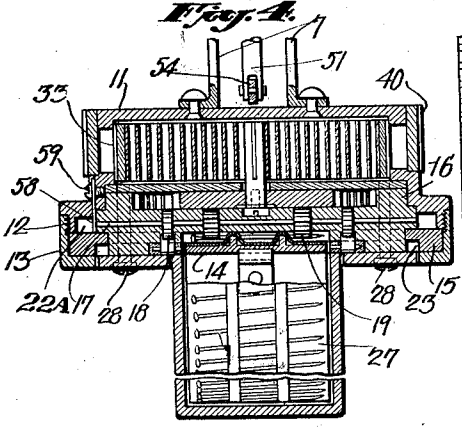


Fig. 6.

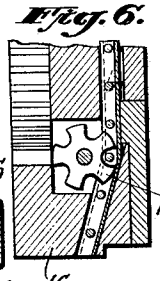
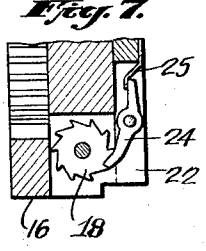


Fig. 7.



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Fig. 8.

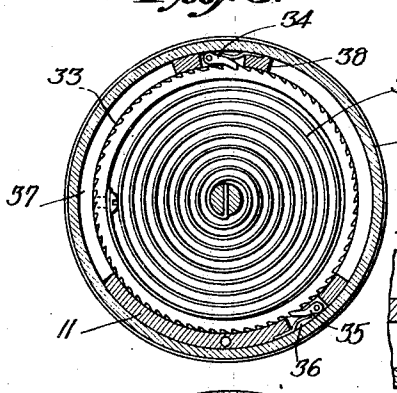


Fig. 9.

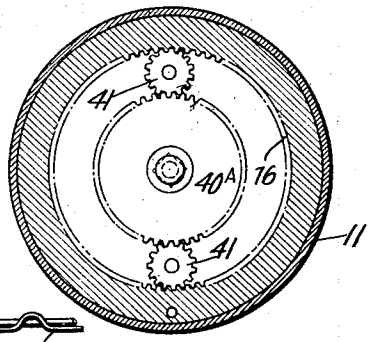


Fig. 15.

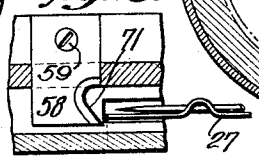


Fig. 10.

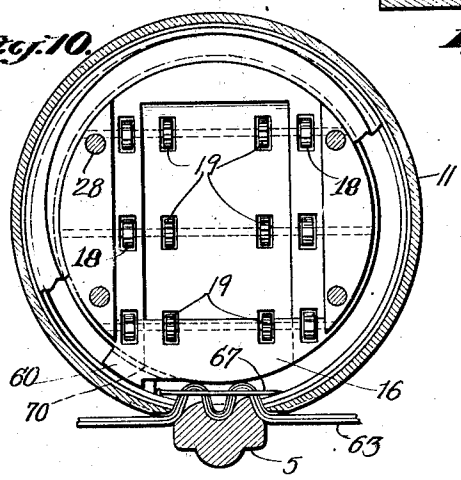


Fig. 11.

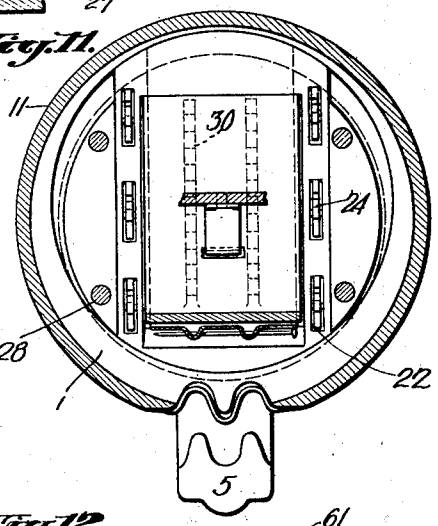


Fig. 14.

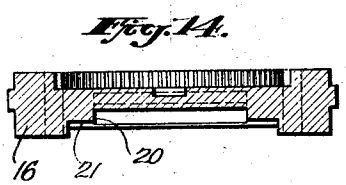


Fig. 12.

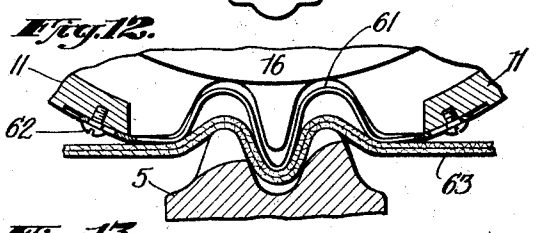
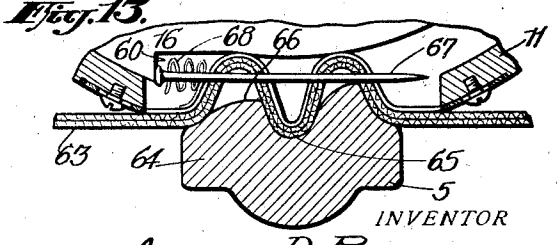


Fig. 13.



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UNITED STATES PATENT OFFICE

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PINNING MACHINE

Application filed May 5, 1928. Serial No. 275,418.

This invention relates to a hand pinning machine and in particular to one which is entirely automatic in its operation.

In the piecing of goods together, for instance, in goods that is made up for pattern, and in order to determine how the same will look when it is completed, it has been the practice heretofore, to pin the goods together along the edges thereof. In doing this, the operation has been performed by hand in rather a haphazard fashion and the pinning, on the whole, has been carried on under unsatisfactory conditions and with a great loss of time.

It is a particular object of my invention, therefore, to provide a hand pinning machine which will automatically gather the goods, crimp the same and pin the plies thereof together, thereby saving time and doing the work thoroughly and properly.

A further object of the invention is to provide an automatic hand pinning machine having a pin holding magazine, the pins being arranged on a paper strip so that the magazine can be loaded with a minimum of time and so that the pins can be fed successively into the drum from which they are forced through the material in quick succession.

A still further object of the invention is to provide a machine of this character which will be simple in construction, will have few parts and whose operation will be positive and will be carried on without clogging or jamming of the machine parts.

A still further object of the invention is to provide a spring propelled machine, the spring of which may be wound at suitable intervals to maintain the proper operation of the machine.

To enable others skilled in the art to fully comprehend the underlying features of my invention that they may embody the same in the various modifications in structure and relation contemplated, a drawing depicting a preferred form has been annexed as a part of this disclosure and in such drawing, similar reference characters denote corresponding parts throughout all the views, of which

Figure 1 is a view in side elevation of the machine as it would appear when not in use, parts thereof being broken away to illustrate the stop mechanism which is operable from the jaw or handle member.

Figure 2 is a view in end elevation of the machine illustrated in Figure 1, in this position, the jaw being closed and the magazine being positioned at the top of the frame.

Figure 3 is a section taken on the line 3—3 of Figure 2 and shows the internal working parts of the machine.

Figure 4 is a section taken on the line 4—4 of Figure 3 and illustrates how the pins are fed down through the medium of suitable ratchet propelled feed wheels, the storage of the pins in the magazine being also illustrated.

Figure 5 is a section taken through the annular gear and the slide plate, the annular gear carrying the pawls while the slide plate carries the pawl dogs or ratchets.

Figure 6 is an enlarged view of the lower ends of the annular gears, the section being taken through one of the feed wheel compartments and illustrating how the pins are fed down between the annular gear and the retaining plate.

Figure 7 is an enlarged view of the lower end of Figure 5 to more clearly illustrate the relative position of the ratchet wheel and pawl.

Figure 8 is a section taken on the line 8—8 of Figure 3 and illustrates how the operating spring may be rewound.

Figure 9 is a section taken through Figure 3 to illustrate the position of the drive gear and its associated pinion, the pinions in this position imparting to the annular gear, a rotating movement.

Figure 10 is a section taken on the line 10—10 of Figure 3, the view showing the eccentric ring, the annular gear and the slide plate which carry the feed wheels and ratchet wheels respectively.

Figure 11 is a view in section taken slightly forward of the line 10—10 of Figure 3 and shows how one of the pins is ejected upon a half revolution of the slide plate, the retaining plate being also illustrated and being in its inverted position relatively to Figure 3.

Figure 12 is a view of the lower, circumferential edge of the casing showing the crimping strip and also showing how the fabric layers will be tucked into the jaws of the anvil which is formed on one of the handle members.

Figure 13 is a view of the final action of the mechanism, the view illustrating only the lower edge of the casing as illustrated in Figure 12 and showing how the pin will be driven through the plies of goods and the paper thereon will be crumpled up beneath the pin head and will be out of the way and in no danger of clogging the machine, and

Figure 14 is a section in top plan taken through the annular gear showing the pin passage therein and the cut out for the reception of the slide plate, the feed wheels in this instance being omitted.

Figure 15 is a fragmentary view partly in section showing the knife for severing part of the pin holding web.

Referring to the drawings in detail, 5 and 6 indicate inter-engaging handle or arm members which are punched out to provide the hand holds 7 which incidentally provide receptacles for the ends of the spring 8 which passes about the pivot point 9 on which the arms 5 and 6 are pivoted, the spring having a tendency to normally maintain the outer ends of the arms apart. The outer end of the arm 7 is secured through the medium of the rivets 10 to the casing 11. This casing is threaded as at 12, see Figure 4, on its front face and is arranged to receive the casing ring 13, the ring supporting therein in any suitable manner, the magazine 14, whose lower extension 15—A provides a cover for the casing. Between the casing ring 13 and the casing 11, there is imprisoned, an eccentric ring 15. This eccentric ring is clearly illustrated in Figure 11 and has positioned within its eccentric cut-out, the annular gear 16. This annular gear carries shafts 17 and towards the outer ends of these shafts, there are mounted the ratchet wheels 18 and on the shafts 17 and toward their centers, there are mounted the feed wheels 19. As illustrated in Figure 14, the annular gear 16 is provided with a pin passageway 20 and a sliding plate passageway 21, the bottom or lower end of the pin passage 20 being diverted from its vertical position so that pins passing down the passageway 20 will be discharged into a suitable groove 22—A formed between the eccentric ring and the peripheral edge of the annular gear 16.

Within the cut-out 21, there slides the plate 22, illustrated in Figure 11, and whose ends are positioned within the eccentric cut-out 23 of the eccentric ring 15, the inner opening in the ring being concentric and supporting, as before mentioned, in revolvable position, the annular gear 16. This ratchet plate 22 carries the pawls 24 which are maintained through the medium of the springs 25, in contact with the ratchet wheels 18 carried in the annular gear 16. This is clearly illustrated in Figure 7 and in Figure 5 and it is quite evident that upon a rotating movement of the annular gear, the ratchet plate 22 will be carried around and, due to its sliding contact with an eccentric portion of the eccentric ring, will be given a longitudinal feed movement with the result that its pawls 24 will revolve the ratchet wheels 18 to cause a feeding movement of the feed wheels 19 to feed the pins down through the pin slot 20 formed in the annular gear.

It will be understood that these pins are mounted for convenience at an angle on a paper web 27, which in its rolled formation, as illustrated at 28—A in Figure 3, may be conveniently positioned within the magazine 14 carried on the annular gear and revolvable therewith, the same being secured in position through the medium of the screws 28. The pins on this web of paper 27 are fed down through the pin passage 20 by reason of the movement of the feed wheels 19 and their movement in a reverse direction is prevented by the retainer plate 29, one face of which is provided with the downwardly extending teeth 30, it being quite evident that the pins will ratchet over these teeth in their downward movement and the teeth will then overlie the lower pin and will prevent its upward movement so that the pins will be fed positively into the channel 22—A provided for them about the periphery of the annular gear.

In order to move the annular gear in a rotative motion, I have provided a stud 31 to which is secured one end of a clock spring 32, the outer end of the spring being secured to the ratchet ring 33, the outer surface of which is provided with ratchet teeth, as illustrated in Figure 8, which are arranged to be engaged by the pawl 34 and pawl 35, the latter being a holding pawl which is arranged to prevent unwinding of the spring and which is carried in a suitable cut-out 36 in the casing 11, the casing being cut out in a large part of its periphery as at 37 to provide a space in which may travel the driving pawl holding block 38 in which the driving or winding pawl 34 is secured, this portion 38 being secured on the inner periphery of a winding ring 39, the outer surface of which is knurled as at 40 so that the same may be conveniently rotated back and forth to revolve the ratchet ring 33 and wind the spring 32. The winding ring 39 covers the cut-out portion 37 of the casing 11 and it will be quite evident from the inspection of Figure 3 that the block 38 prevents the ring 39 from becoming separated from the casing 11.

When the spring has been fully wound, it places a tension on the stud 31 which has a tendency to revolve the driving gear 40—A,

which is secured to the squared end of the stud and revolves therewith. This driving gear 40—A in turn, revolves the driving pinions 41 which cause rotation of the annular gear 16 and which during its revolving movement causes a reciprocating motion of the ratchet plate 22 during one complete revolution.

The pinions 41 are maintained in position on a stationary plate 42 which is secured in the casing in any suitable manner. It is of course understood that the inner periphery of the annular gear 16 is provided with suitable teeth with which the pinions 41 mesh.

In the operation of the device, it is necessary to control the movement of the annular gear and in order to do this, I have provided on the handle 5, a link 44 which is pivoted to the handle as at 45 and at its outer end, is secured to a clamping collar 46, this clamping collar engaging about the reduced portion of an adjusting nut 47 which has threaded engagement with a stem member 48 whose opposite end is provided with a slot 49 in which operates the pin 50 carried by a telescopic member 51 which fits into the hollowed end of the stem member 48 and is yieldably urged toward its end through the medium of the spring 52 which is positioned between the end of the member 51 and the bottom of the tubular portion of the stem member 48. The outer end of the member 51 is arranged to have pivoted thereto as at 53, the lever 54 which is pivoted as at 55 to the arm 6 but which is normally urged toward the casing 11 through the medium of the spring 56 which is coiled about the pivot 55 and whose ends engage respectively the casing and the lever 54, the lever at its free end carrying the stop pin 57 which has pin and slot connection with the end of said lever. This stop pin passes through the casing as illustrated in Figure 3 through the stationary plate 42 and into a suitable opening in the annular gear 16. It is quite evident that a closing movement of the arms 5 and 6 will draw the stem member 48 rearwardly to withdraw the stop pin 57 from the opening in the annular gear, thus permitting the clock spring 32 to revolve the annular gear through the medium of the gear 40 and the intermediate pinions 41. During this revolution of the annular gear, as hereinbefore described, the ratchet plate 22 will be moved down or towards the discharge end of the annular gear so that the feed wheels 19 will cause the advance of one pin out of the opening formed at the lower end of the pin passage 20, this pin then being held in the slot 22—A provided for that purpose and upon a continued movement of the annular gear being severed from the main web 27 of the pin carrying paper, through the medium of the knife 58. This knife, as illustrated in Figure 4, is secured to the frame through the medium of the screw 59 and extends into the slot 22—A so that when the pin passes the knife, the portion of paper holding the same will be severed from the main pin carrying web with the result that the pin will be in the slot 22—A and will be carried around by the hammer extension 60 of the annular gear 16, as illustrated in Figure 10. As a complete half movement or half revolution of the annular gear 16 takes place, the hammer 60 forces the pin down and through the gathered material, this gathered material being held in position between the shaping strip 61 which is illustrated in outline in Figure 3 and is provided with a central opening for passage therethrough of the pins, the strip being secured through the medium of suitable screws 62 across an opening in the bottom of the casing 11, the goods in this instance being illustrated by the numeral 63 and being arranged to be crimped over the anvil portion 64 of the outer end of the arm 5. The shaping strip 61 is made of resilient metal and forces the goods down into the depression 65 provided in the anvil 64, the upper edges of the anvil, as at 66 being shaped to guide the pin through the crimped portion of the material 63. This operation is quite evident from inspection of Figures 12 and 13 and in the latter, it will be noted, that the piece of paper that has surrounded the pin 67 is crumpled up as at 68 beneath the pin head, when the pin has been forced through the corrugations of the material.

With my improved device, it is possible to gather the material and pin it with a single operation of the device. When the annular gear completes its revolution, after the arms 5 and 7 have been permitted to separate, thus drawing the anvil away from the goods, and allowing the goods to drop out of the shaping plate 61, the hammer portion 60 will be free to rotate and the annular gear will continue its rotation until the opening therein registers with the stop pin 57 and the stop pin will then be forced into the opening and another pin will be in the opening 22—A but will be part of the web 27. On the next successive operation, the ratchet plate 22 will be moved in a non-feeding direction, the pin will be severed and placed in the material and again after release, the continued operation of the annular gear will impart to the ratchet plate, a feed movement, thus forcing another pin out into the slot 22—A in position to be severed from the main pin carrying web of paper upon the next half revolution of the annular gear.

It is quite evident that a small space must be left between the hammer 60 and the main body of the annular gear, this slot being indicated by the numeral 70 and permitting passage therethrough of the knife member 58, whose front cutting face is bevelled as at 71 to provide a shearing action so that the

paper web 27 will be cut thus separating the pin from the main web 27.

It is evident that the magazine could be positioned at any angle relatively to the casing, this being a matter of construction, in the event it is desired to have the space on the casing above the anvil unobstructed so that the proper crinkling of the goods could be observed when the device was in use.

It is also evident that I have provided a machine which is simple in operation and which positively feeds the pins to a position where they can be projected through the gathered portions of the layers of goods.

It is also evident that I have provided a device which will effectively pin two or more layers of material together and a device which can be manipulated rapidly to place any number of pins along the edge of a pile of material, the bunched paper beneath the head of the pin will show at a glance where the material is pinned and will also facilitate withdrawal of said pins.

It is evident also that the spring wound mechanism may be maintained in operative position at all times by a few movements of the winding ring thus enabling the device to be used constantly and without unnecessary interruption.

It is also evident that I have provided a machine in which a magazine is provided for the storing of a quantity of pins which may be fed out singly to secure the goods together.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the arrangement of the correlated parts without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by United States Letters Patent is:—

1. A hand pinning machine comprising a pair of pivoted arms, a casing carried on one of the arms provided with a peripheral passageway, an anvil on the other arm for coacting with said casing to hold and crimp the material therebetween, an annular gear in the casing, means for imparting a revolving movement to said annular gear, a feed plate, a pin magazine revolvable with said annular gear and from which pins are fed by said feed plate into the peripheral passageway in said casing, and an extension on said annular gear for forcing the pins successively through the crimped material.

2. A hand pinning machine comprising a pair of pivoted arms, a casing carried on one of the arms provided with a peripheral passageway, an anvil on the other arm for coacting with said casing to hold and crimp material therebetween, a pin magazine, an annular gear in the casing, means for revolving said annular gear, a feed plate for feeding the pins from the magazine through said annular gear and into the peripheral passageway in the casing, a stop pin arranged to engage said annular gear, a link connection between the stop pin and one of the pivoted arms for automatically permitting disengagement of the stop from the annular gear when the pivoted arms are drawn together to perform a material crimping operation, and an extension on said annular gear for forcing a pin that has been fed into said passageway through the crimped material.

3. A hand pinning machine comprising a pair of pivoted arms, a casing carried on one of the arms provided with a peripheral passageway, an anvil on the other arm for coacting with the casing to crimp and hold material therebetween, a pin magazine in the casing, an eccentric ring in the casing, an annular gear, means for revolving said gear, a feed plate carried on said annular gear and arranged to cooperate with the eccentric ring whereby a reciprocating motion is imparted to the feed plate upon a revolving movement of said gear, a magazine carried by said annular gear, means actuated by the feed plate for feeding a pin carrying web so as to dispose the end pin of the web in the peripheral passageway in the casing, and means on the annular gear for forcing a pin fed into the passageway through the crimp of the material.

4. A hand pinning machine comprising a pair of pivoted arms, a casing carried on one of the arms, an anvil on the other arm for coacting with said casing to hold and crimp material therebetween, a pin magazine, an annular gear in the casing and arranged to support said magazine, a spring mechanism for rotating said annular gear, a plurality of feed wheels in the annular gear, a shaft for carrying said feed wheels, ratchet wheels on said shaft, a feed plate, means for causing the plate to have a reciprocating motion upon a rotating movement of said annular gear, pawls carried by said feed plate for operating said ratchet wheels to cause an advance movement of said feed wheels for feeding a pin carrying web so as to cause the pins to be fed singly beyond the periphery of said annular gear member during a rotary movement thereof, a knife for automatically severing the projected portion of the web carrying a single pin during a rotary movement of said annular gear, and an extension on the annular gear for forcing said severed pin through the crimp in the material.

5. A hand pinning machine comprising a pair of pivoted cooperating jaw members, a pin feeding mechanism in one of the jaws, means on the jaw for holding material in

crimped position therebetween, means for operating the feed mechanism, and means connected to one of the jaw members for automatically permitting operation of the feed mechanism when the jaws are moved to crimping position.

6. A hand pinning machine comprising a pair of pivoted arms, a casing carried on one of the arms, an anvil on the other arm for coacting with said casing to hold and crimp material therebetween, a spring in the casing, a winding ring to which one end of the spring is attached, a stud at the other end of the spring, an annular gear, a gear train between the stud and the annular gear for rotating the latter, feed wheels in the annular gear, feed ratchets, a magazine, a feed plate coacting with the ratchets for operating the feed wheels to feed a pin carrying web out of the magazine, means for operating the feed plate, a stop pin for engaging the annular gear, a link mechanism connecting the pin to one of the arm members whereby the gear will be permitted to revolve upon a material crimping operation, a knife for severing one pin from the web, and an extension on the annular gear for forcing said severed pin through the crimp of the material.

7. In a machine of the character described, relatively movable members, a pin feeding mechanism in one of the members, means on one of the members for crimping material held between said members, means for operating said pin feeding mechanism, and means associated with one of the members for automatically permitting operation of the feed mechanism when the members are moved to material holding position.

8. A hand pinning machine comprising a pair of jaws, a handle extension on each jaw, a magazine carried by one of the jaws, material crimping means in both of the jaws, and means for forcing a pin through the crimped material.

9. A hand pinning machine comprising a jaw member, a pin feeding mechanism in the jaw, means on the jaw for crimping material, means for operating the feed mechanism, and means connected to the jaw for automatically permitting operation of the feed mechanism when the jaw is moved to a crimping position.

10. A hand pinning machine comprising a pair of pivoted arms, a casing carried on one of the arms, means on the other arm coacting with said casing to hold the crimped material therebetween, said casing being provided with a peripheral passageway, a pin magazine, an annular gear in the casing, means for rotating said annular gear, a feed plate, means for causing the plate to have a reciprocating motion upon a rotating movement of said annular gear, means actuated by the feed plate for feeding a pin carrying web so as to cause the pins to be fed singly beyond the periphery of the annular gear during rotary movement thereof, a knife for automatically severing the projected portion of the web, and means on said annular gear for forcing the severed pin through a crimp in the material.

In testimony whereof I affix my signature.

ARTHUR D. RUSSELL. [L. S.]